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Stellingen behorende bij het proefschrift

Classification of symmetry breaking patterns in the theory of non-linear realizations

Pelle Werkman

- Any realization of a partially broken symmetry $\mathfrak{g}$ that becomes linear on a sub-algebra $\mathfrak{h}$ is equivalent to a transformation law derived from the coset construction.
- All transformation laws derived from the coset construction are equivalent after projecting out inessential fields.
- The classification of non-linearly realized symmetries is possible using properties of soft limits in scattering amplitudes or by algebraic methods in the theory of non-linear realizations.
- Exceptional EFTs (non-linear symmetries having enhanced soft limits for a given power counting) can be classified exhaustively for scalar, spinor and vector Goldstone modes.
- The algebraic and amplitudes methods generalize to supersymmetric theories. The notion of inverse Higgs constraints in space-time generalizes to superspace.
- $\mathcal{N} = 1$ supersymmetric exceptional EFTs can be classified for chiral, Maxwell and real linear supermultiplets.